

# Status Report on NOAA's Current & Future Satellite Systems

Presented to CGMS-44, Plenary Session, Agenda Item D

# Science, Service, Stewardship – Supporting NOAA's Mission

PLANES FLY,

SHIPS SAIL,

UMBRELLAS OPEN,

CITIES PREPARE AND LIVES ARE SAVED

CROPS ARE PLANTED,

WITH FORECASTS MADE USING DATA & INFORMATION

FROM **NESDIS** 

National Environmental Satellite, Data, & Information Service

[www.nesdis.noaa.gov](http://www.nesdis.noaa.gov)

# Coordination Group for Meteorological Satellites - CGMS



## Coordination Group for Meteorological Satellites

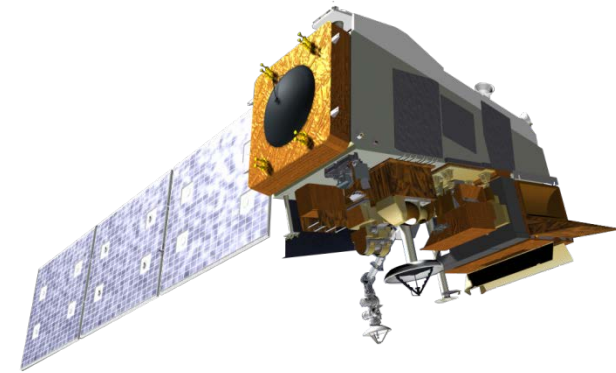
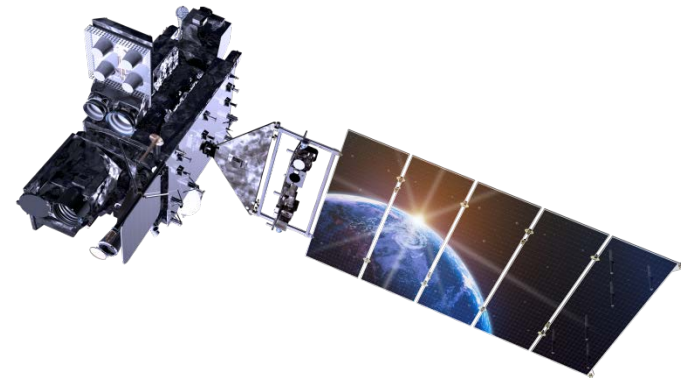


# Recent & Upcoming Launches



# NOAA's Established LEO and GEO Platforms

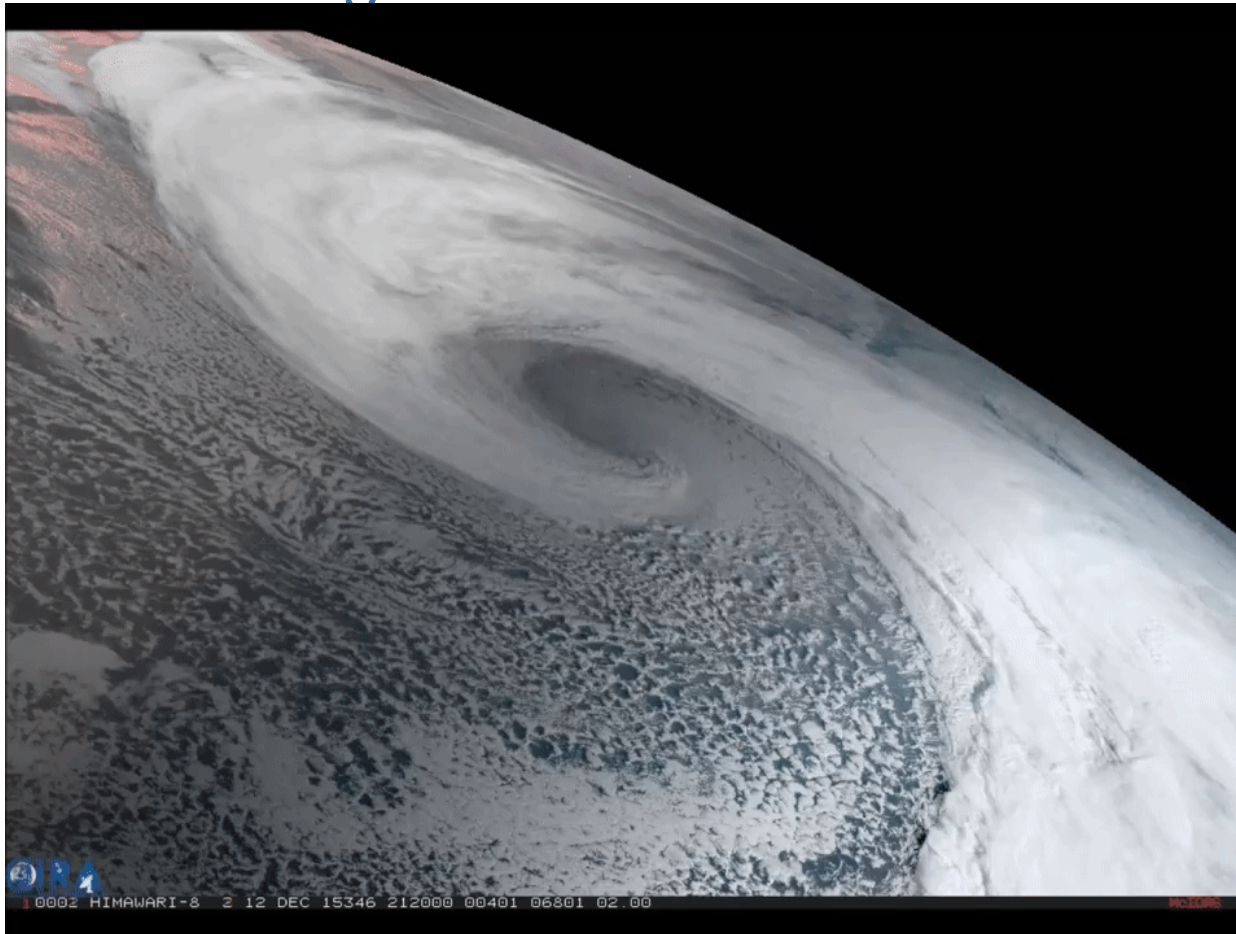
- From Geostationary Orbit
  - The GOES-R through U series, following on the GOES-N/O/P series, provides the US continental coverage well into the 2030s
- From Low Earth Orbit
  - The five satellite combination of JPSS + Polar Follow-On will establish NOAA's LEO coverage in the afternoon orbit well into the 2030s
- Together, these platforms form the backbone of our observing network for the coming decades





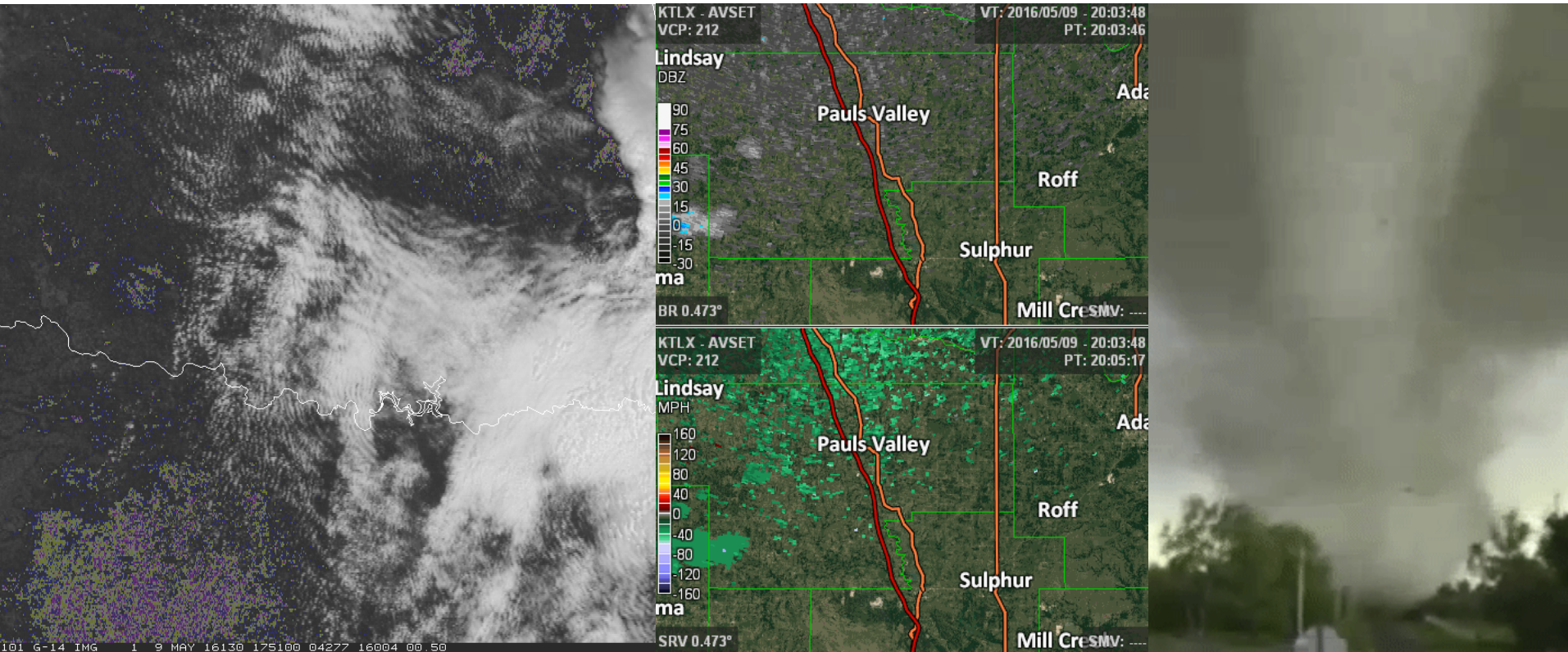
# The Future of Forecasting: GOES-R

# Preparing Users for GOES-R: Learning from JMA's Himawari-8



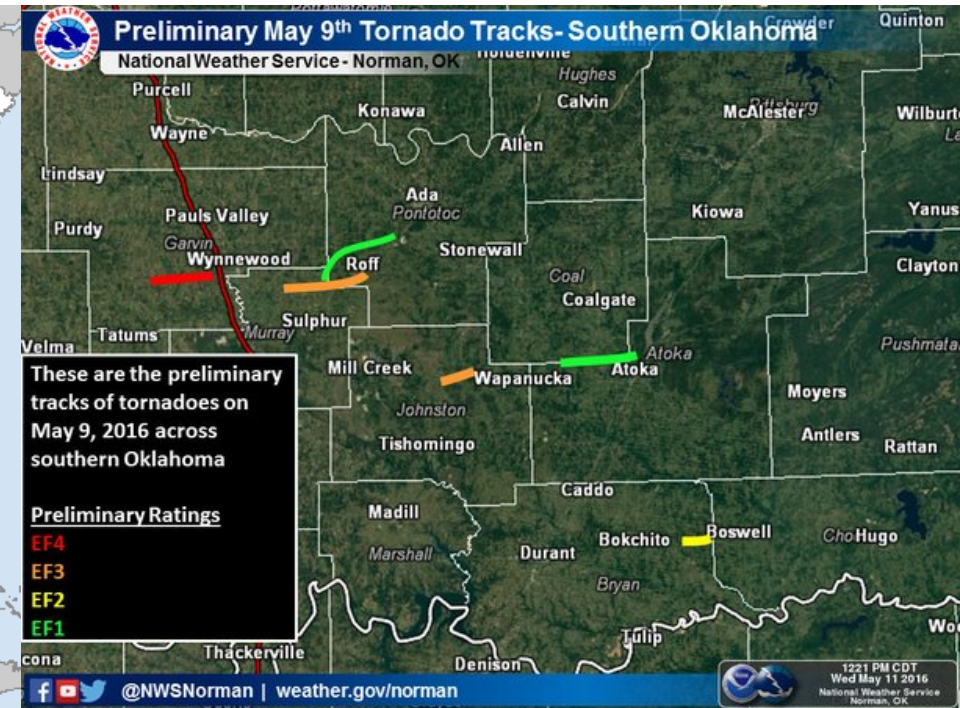
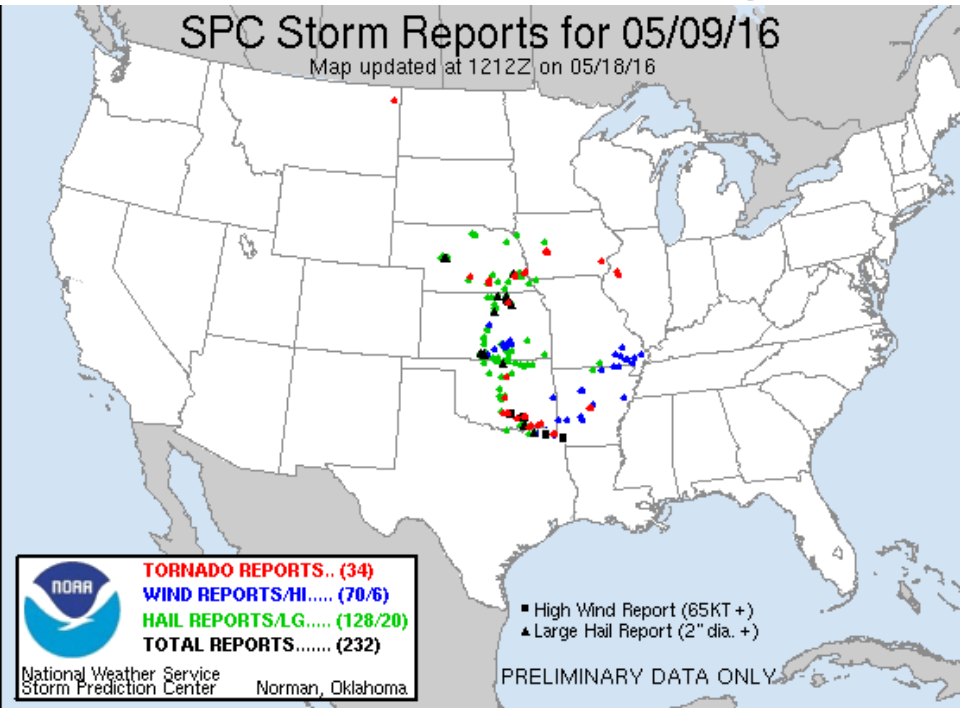


# Preparing Users for GOES-R: Data Integration



"For initial development along the dryline, convection went up very fast. Without the 1-minute data, we wouldn't have been able to recognize so soon that convection initiation was occurring. It was helpful to see the overshooting tops as they occurred in near real-time. It helped us to figure out right away which storms had the strongest updrafts." –William Line, Storm Prediction Center/Hazardous Weather Testbed GOES-R/JPSS Satellite Liaison, University of Oklahoma-CIMMS

# Preparing Users for GOES-R



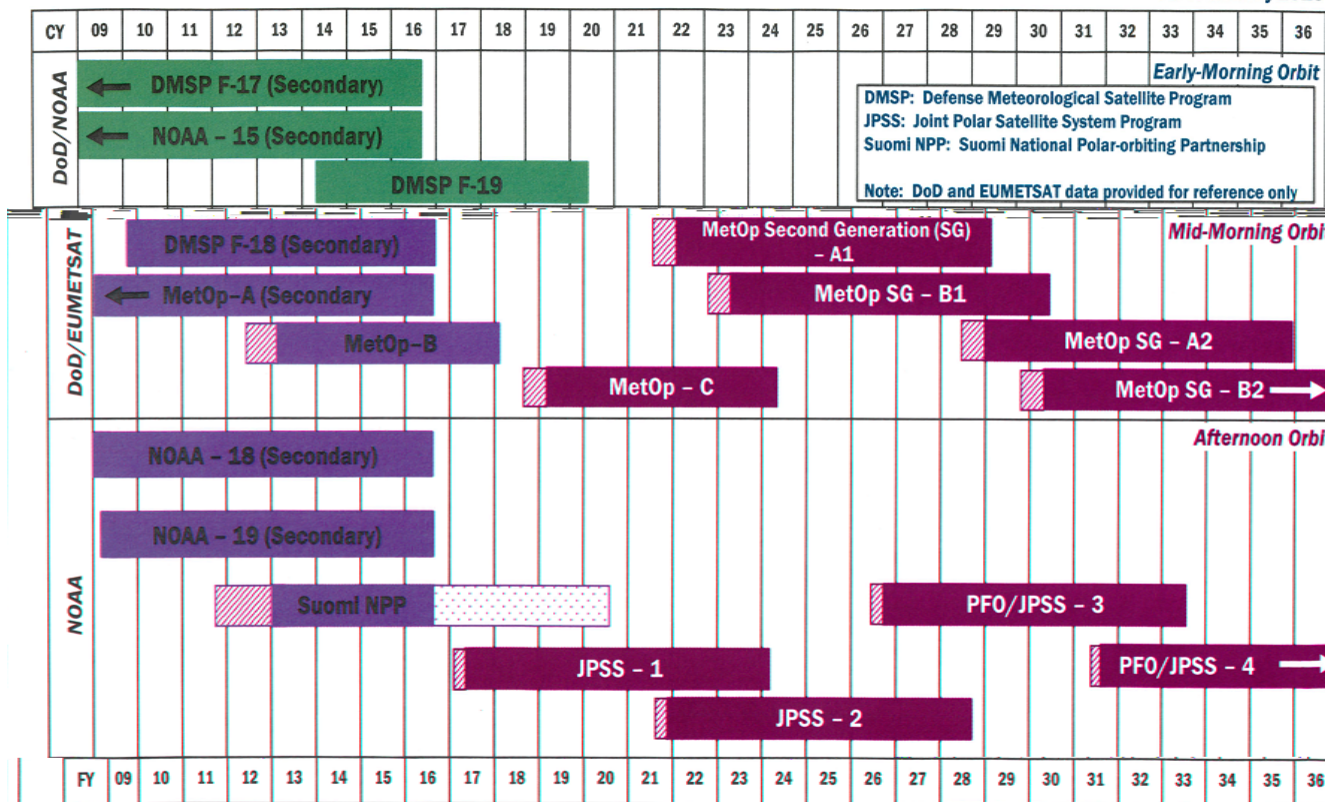
Time	Location	County	State	Lat	Lon	Comments
2104	4 NNW HENNEPIN	GARVIN	OK	3456	9736	*** 1 FATAL *** UPDATED. EF4 TORNADO PATH FROM 1.25 MILES SOUTH OF KATIE OR ABOUT 4 MILES NORTH OF HENNEPIN TO 8 MILES EAST OF KATIE OR ABOUT 5 MILES SOUTHWEST OF WYNNE (OUN)



## NOAA & Partner Polar Satellite Programs Continuity of Weather Observations



As of January 2016



DMSP: Defense Meteorological Satellite Program  
 JPSS: Joint Polar Satellite System Program  
 Suomi NPP: Suomi National Polar-orbiting Partnership  
 Note: DoD and EUMETSAT data provided for reference only

Approved: *Stephens*  
 Assistant Administrator for Satellite and Information Services

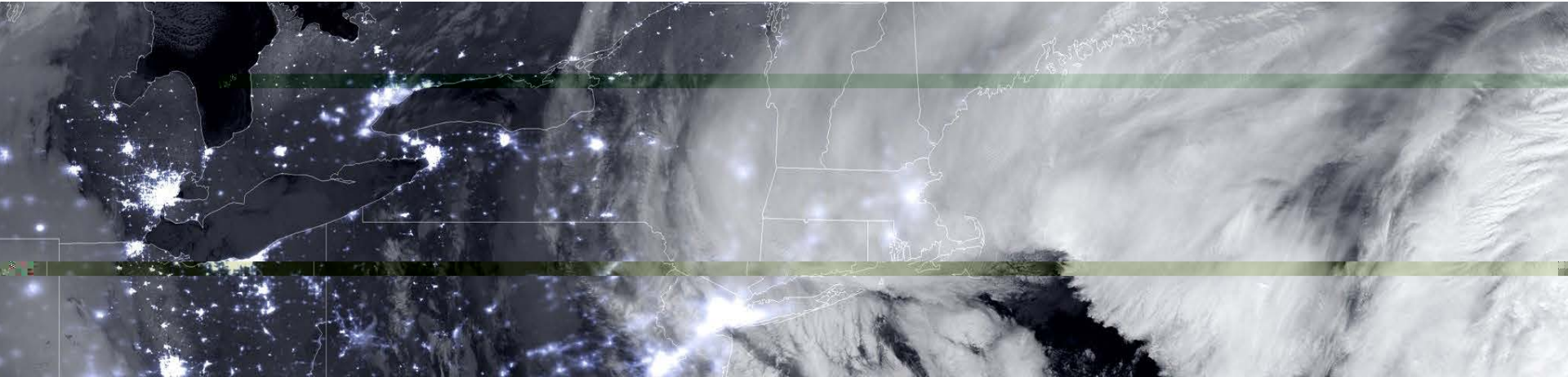
Note: Extended operations are reflected through the current FY, based on current operating health.

- In orbit
- Post Launch Test
- Fuel-Limited Lifetime Estimate
- Planned Mission Life, from Launch Readiness Date
- ← Launched before Oct 2008
- Operational beyond Dec 2036

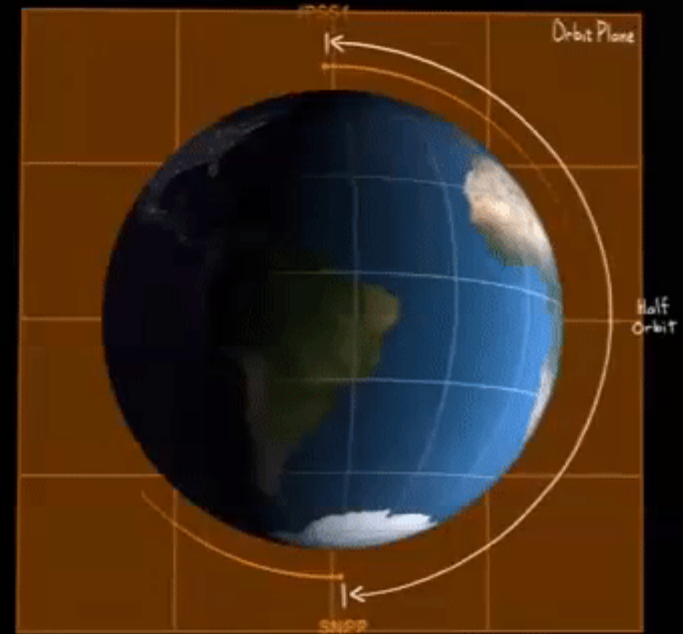
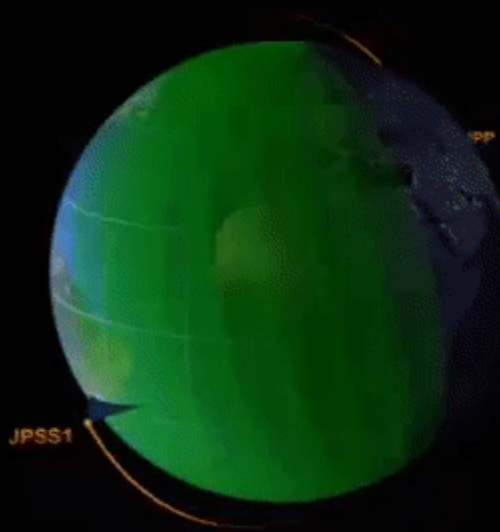


# The Future of Forecasting: JPSS

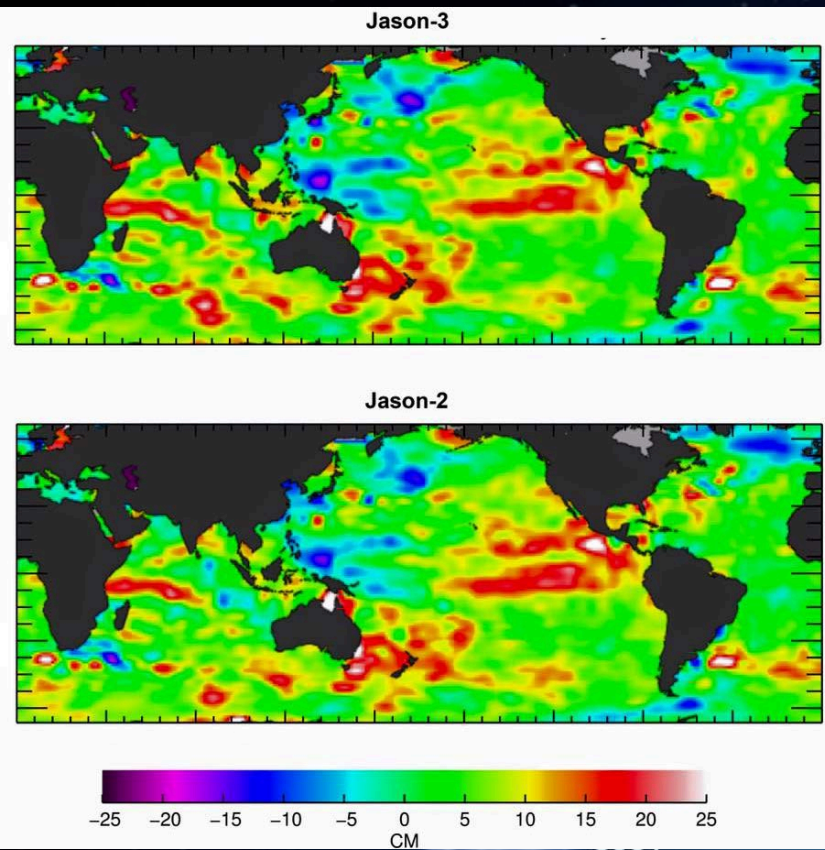
- Suomi NPP is operational
- JPSS-1 is executing as planned
- JPSS-2 procurement progressing well
- Polar Follow-On – JPSS-3/4



# Plan for Suomi NPP & JPSS-1 Joint Operations



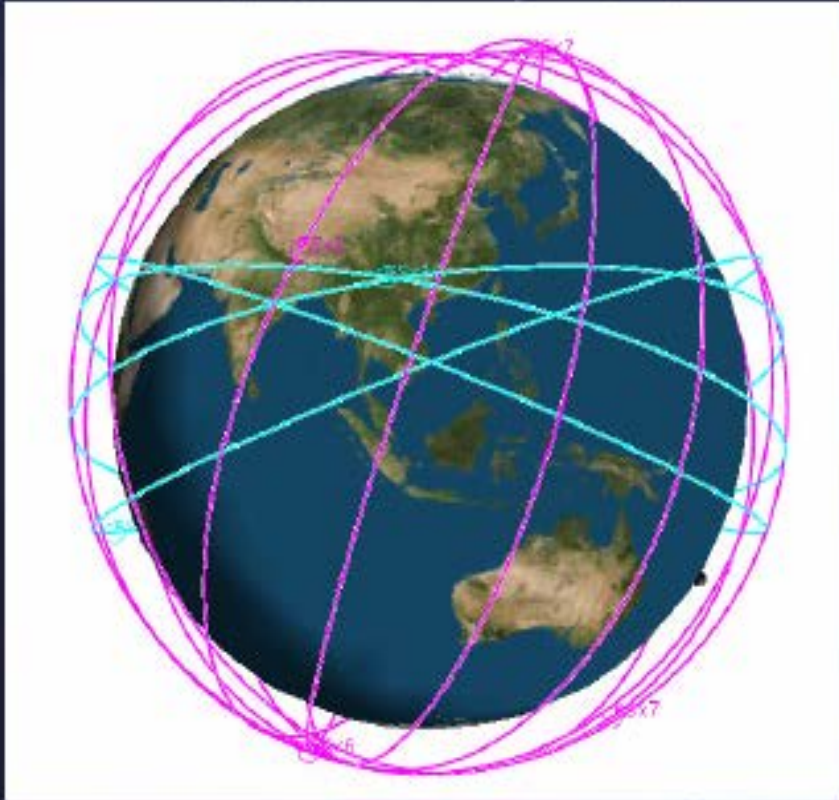
# Ocean Altimetry: Jason-3



- Partnership with EUMETSAT, CNES, NASA
- Successfully launched 17 January 2016

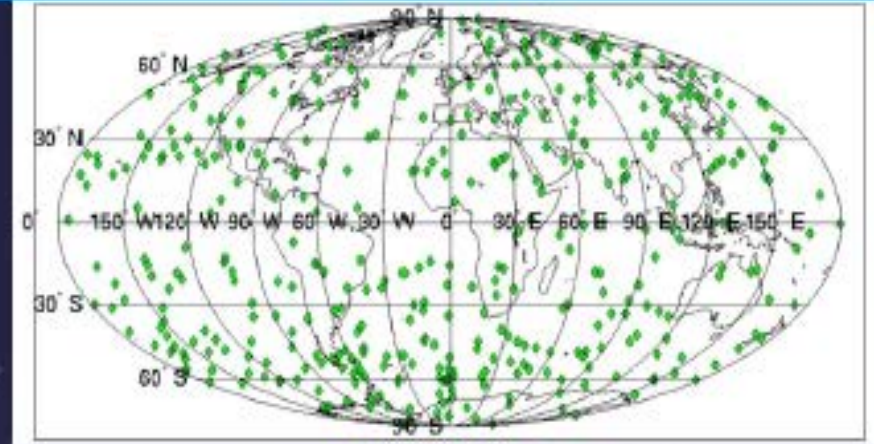


# Radio Occultations: COSMIC-2

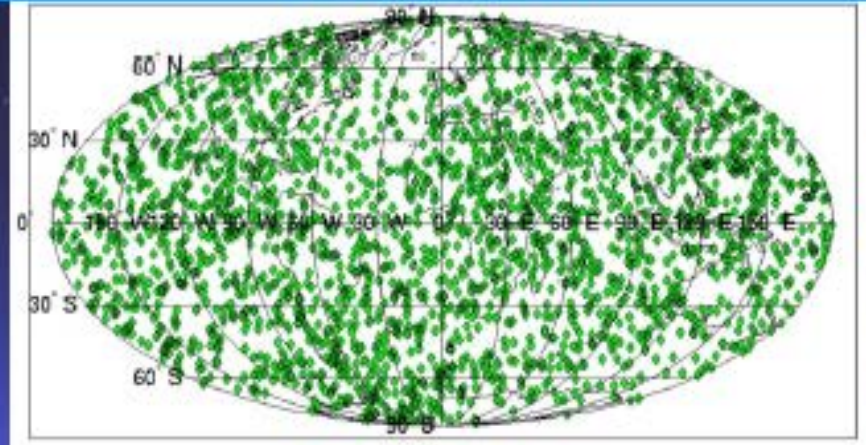


**12 Satellites - 2 inclinations**  
**Data are distributed**  
**more homogeneously**

**COSMIC Occultations-3 Hrs Coverage**



**COSMIC-2 Occultations - 3 Hrs Coverage**



# Space Weather: DSCOVR



- Launched 11 February 2015
- NOAA operating since 28 October 2015





# Constellation of Meteorological & Environmental Satellites





**Identify user needs**  
Engage with our various users in order to understand their needs.



**Determine How to Meet User Needs**

Identify the satellite, ground, product processing and distribution, or archival systems required to meet our user's needs.



**Access Data**

Obtain the necessary data by building, blending, or buying it.

- **Build:** Managing NOAA's current and future satellite programs
- **Blend:** Working with U.S. and international partners to develop and build satellite systems
- **Buy:** Purchasing data provided by commercial satellite systems

## NESDIS Data Lifecycle

UNDERSTANDING OUR DYNAMIC PLANET AS A TRUSTED SOURCE OF ENVIRONMENTAL DATA



**Provide useful data in near real-time**

NESDIS operates satellites 24/7, processes data using developed algorithms, and transmits data to users in near real-time.



**Provide archived data**

NESDIS houses data in an archive and makes it available to outside researchers.



**Use data and conduct research**

NESDIS uses our own data to create operational products and conduct internal research.

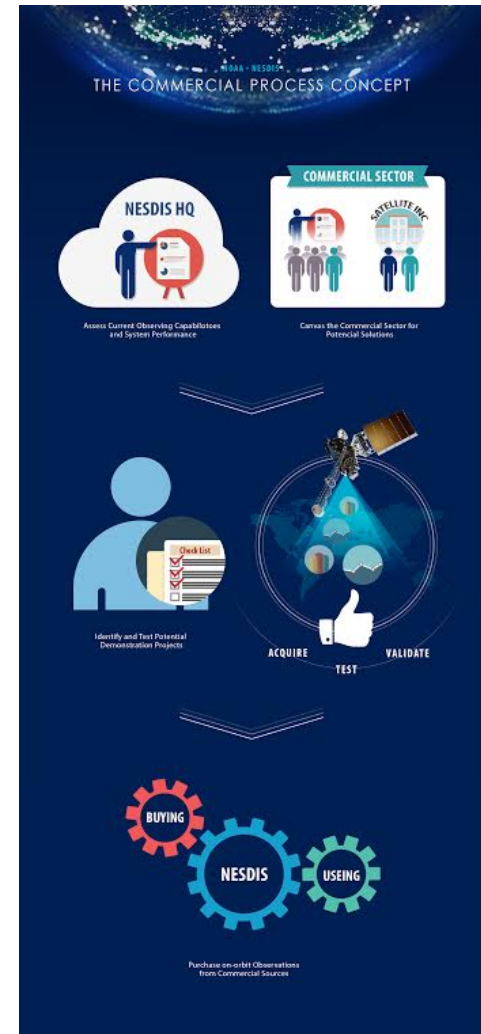


**Make the Data Useful**

Develop algorithms to create products as well as calibrate and validate data to ensure quality and accuracy.

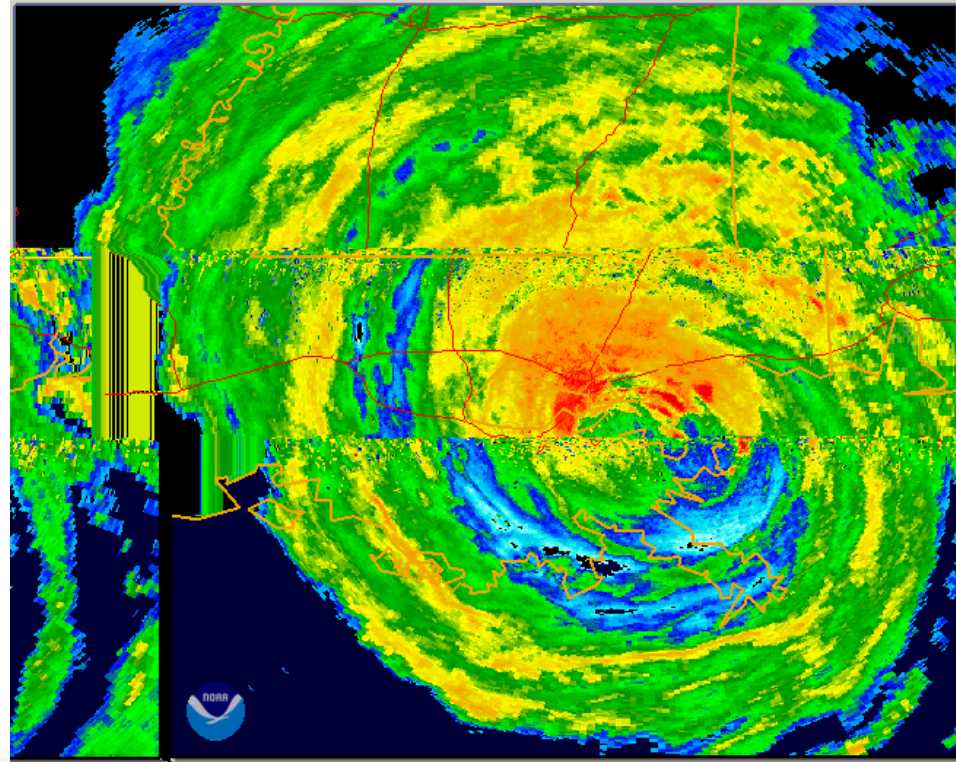
# Commercial Space

- NOAA Commercial Space Policy:
  - Released January 8, 2016
- NESDIS Commercial Space Activities Assessment Process:
  - Reviewing public comments received about draft
- NOAA Commercial Weather Data Pilot:
  - Project to assess data from commercial companies
  - Request for Information (RFI) seeking radio occultation data released May 24, 2016



# Big Data Project

- Cooperative Research and Development Agreement (CRADA)
- 3-year Project
- Developing Prototypes



# Architecture of the Future

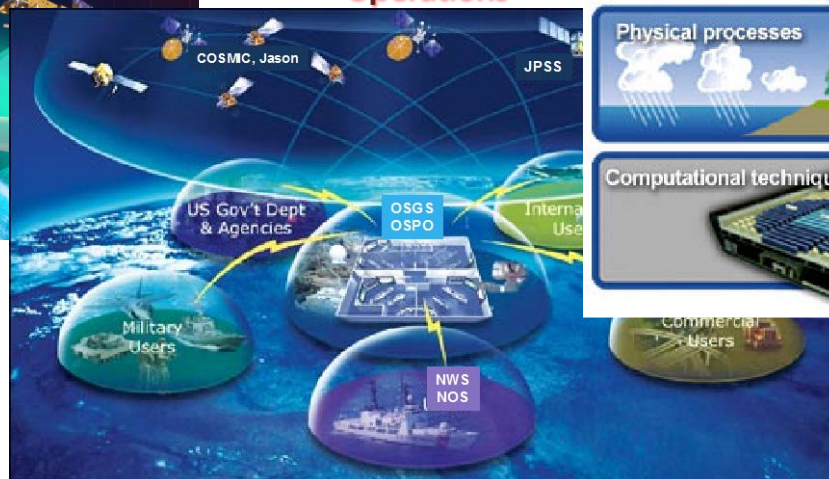
*Develop a space-based observing enterprise that is flexible, responsive to evolving technologies, and economically sustainable.*

*--FY15 NOAA Annual Guidance*

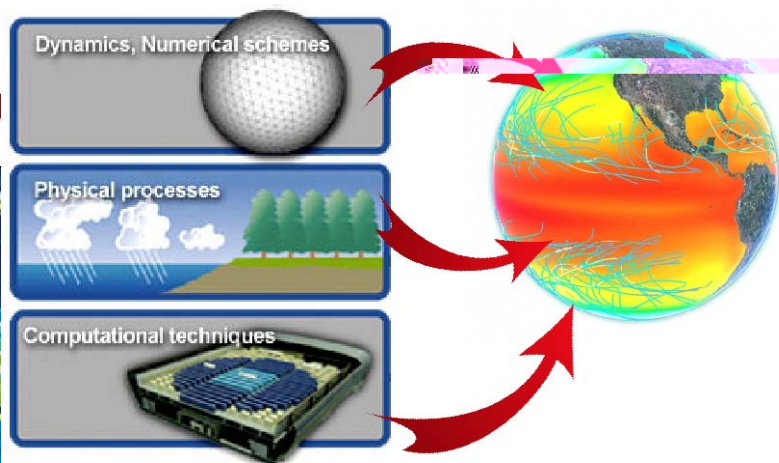
## Global Earth Observing Satellite System



## Next Generation Integrated & Adaptive Operations



## Integrated & Assimilated Operational Data Flow



# Merci

Gracias

감사합니다

Merci

धन्यवाद

Danke

ありがとう

Grazie

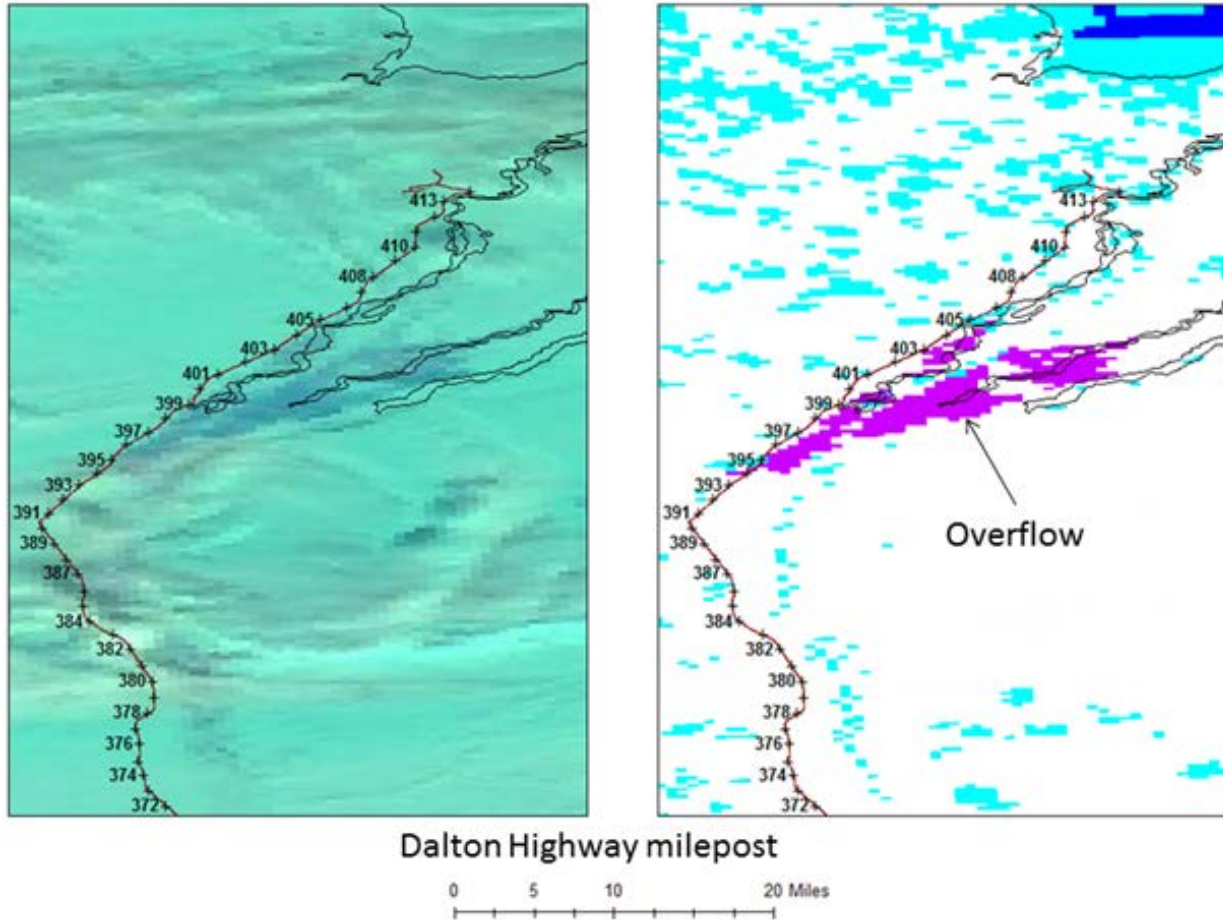
谢谢

Спасибо

Thank you



# The Future of Forecasting: Learning from Suomi NPP



# The Future of Forecasting: Learning from Suomi NPP

